Message

From: Craig, Harry [Craig.Harry@epa.gov]
Sent: 4/28/2015 11:21:50 PM
To: Shuster, Kenneth [Shuster.Kenneth@epa.gov]
CC: Maddox, Doug [Maddox.Doug@epa.gov]; Gervais, Gregory [Gervais.Gregory@epa.gov]
Subject: RE: BAE/HAAP Kingsport TN
Attachments: Propellant-HydrolysisTreatment.pdf

Ken,

Deliberative Process / Ex. 5

Regards,

Harry

From: Shuster, Kenneth
Sent: Tuesday, April 28, 2015 10:10 AM
To: Craig, Harry
Subject: FW: BAE/HAAP Kingsport TN

Deliberative Process / Ex. 5

From: Mark Toohey [mailto: **Personal Email / Ex. 6**
Sent: Tuesday, April 28, 2015 12:46 PM
To: Shuster, Kenneth; Valentine Nzengung
Subject: BAE/HAAP Kingsport TN

Dear Mr. Shuster and Dr. Valentine:

I would appreciate it very much if you would read the enclosed email and let me have your thoughts and analysis:

Quincy Styke

10:50 AM (1 hour ago)

to Barry, James, Carol, Robert, Amanda, Steven, Todd, me

April 28, 2015

Hello Judge Toohey,

I apologize for taking longer to respond, but I was out ill for most of last week. As promised, I asked the facility to respond to the report and also offer the agency's analysis of their response.

I am also enclosing some pictures of why it is so important to treat the waste materials due to their potentially unstable and explosive properties. The picture shows a projectile hole, blown through a chain link fence at a distance of approximately 100 feet, subsequently causing a grass fire.

The facility's response:

In April 2014, BAE Systems Ordnance Systems Inc. (OSI) conducted soil remediation through a chemical application pilot study at the Holston Army Ammunition Plant (HSAAP) located in Kingsport, Tennessee. Munirem was evaluated as part of this study along with hydrated lime and 20% sodium hydroxide (NaOH). Sampling occurred prior to application of the chemicals and at the end of the nearly month-long trial. Very good RDX breakdown occurred with the 20% sodium hydroxide but created a potentially hazardous waste mixture. Hydrated lime and Munirem had comparable in-situ treatment performance with RDX reduction ranging from 30-50%.

In addition to evaluating the effectiveness of the chemicals in reducing the concentration of RDX in contaminated soil the chemicals were evaluated for personnel safety and hazardous material handling. All three materials were highly reactive with strong acids with this reaction possibly producing sufficient heat to ignite combustible materials. However, Munirem presented the following unique warning:

> **"Warning!** Self-heating; exposure to air may cause substance to self-heat without an energy supply. Spontaneously combustible material. Exposure to small amounts of water causes spontaneous ignition, & the resulting decomposition causes SO_2 to be released. Large amounts of water will dissolve the product but the stability of solutions is limited & they quickly oxidize when exposed to air. Strong reducing agent. Fire and explosion risk in contact with oxidizing agents. Causes eye irritation. May cause skin and respiratory tract irritation. May cause central nervous system effects. Contact with acids liberates toxic gas, sulfur dioxide. Heat sensitive."

This warning provided in the MSDS was carefully considered since trials would obviously occur in close proximity to explosives and explosive area, within highly humid and wet environments. The release of sulfur dioxide is also a concern since this area could be determined to contribute to the SO_2 non-attainment area in Sullivan County. Our other decomposition concern is for hydrogen sulfide (H_2S) gas. Munirem would have to be carefully evaluated for potential production of H_2S gas that could potentially impact collection system integrity, expose operators, and cause odor issues. The final concern with continued testing of this product is the solid waste streams that would be generated. Given the pH and the warnings concerning neutralization with acids it is possible any waste generated could potentially be characterized as hazardous under RCRA. Due to the concerns with safety, hazardous materials generation and handling, wastewater characterization, and given the less effective results for the soil sampling pilot study application, Munirem was eliminated from further consideration as a viable alternative to adequately decontaminate bulk waste explosives.

An additional concern is the fact that explosives enter into crevasses of contaminated materials which are not easily detectable. Current chemical application processes are ineffective in penetrating into all the areas of these contaminated materials. HSAAP has used NaOH as a treatment application when performing

decontamination of process lines and vessels prior to maintenance activities. However, even materials that have undergone this treatment have historically been known to periodically detonate during a pile burn. In conclusion, open burning is currently the only approved, safe and effective method of thermal decontamination for HSAAPmaterials. HSAAP has a continuous effort to reduce potentially explosive contaminated waste generated. Phase 1 of HSAAP'sopen burn alternatives study is beginning in the second quarter of 2015 and will concentrate on energetic waste minimization and characterization. The second phase to the open burning study will be the evaluation of non-thermal alternatives. This is anticipated to begin in 2016 and should include an additional detailed look at chemical treatment alternatives.

Regards,

Bob Winstead
Safety, Health, Environment and Security
BAE SYSTEMS Ordnance Systems Inc.
Holston Army Ammunition Plant
4509 West Stone Drive
Kingsport, Tennessee 37660
Phone (423) 578-6253
bob.winstead@baesystems.com

TDEC-APC Analyisis:

The agency believes that the points raised by the facility are valid and warrant continued disposal of the explosives waste by thermal destruction (open burning).

The product Munirem creates hazardous waste residuals. While smoke is created, open burning does not create a hazardous waste stream.

The product Munirem contains sulfur and as such can create sulfur dioxide and hydrogen sulfide. Sullivan County is currently nonattainment for the sulfur dioxide national ambient air quality standard and steps are being taken to bring it into attainment. We should refrain from adding new sources of sulfur dioxide to the area to protect public health and public welfare.

Hydrogen sulfide is a very odoriferous gas that is detectable to human olfaction in the fractional parts per billionlevel and is described in the literature as "rotten egg gas". The release of that gas would likely be more objectionable to the community than the smoke from open burning.

The instability of the product Munirem in proximity to explosives at a munitions plant is a concern to the safety of the community and to workers at the facility.

There is promise of a 2016 study to look at alternatives to thermal disposal, and that may be cause for hope.

Judge Toohey, I have stated before that we are truly concerned about air quality and the impact of emissions on you and your family. It is regrettable, that we must have facilities to make munitions, but that's the world in which we live. America needs munitions to protect itself.

The state air pollution control regulations allow for open burning where there is no other safe, practical or lawful method of disposal. I believe the case has been made that thermal destruction represents the most safe method of disposing of these explosive wastes and therefore, it is in the interest of community safety to allow its continued use. We pledge to remain vigilant in looking for alternative methods of disposal, but until then, we muse allow the burning to continue.

We have worked with our federal counterpart, the United States Environmental Protection Agency in responding to your letter to President Obama. We have encouraged the EPA to work with the Department of Defense in finding a solution to dispose of these explosives wastes in a manner that is acceptable to all.

As a judge, I'm sure that you routinely weigh competing interests and render decisions as to what the law provides and what is best overall within those constraints. We've done that here. The emissions from open burning are less of a threat to the community than the potential for unplanned explosions from untreated wastes being taken off site. I direct your attention to that hole in the fence. What if that was a person's vehicle traveling next to a load of untreated explosive waste? I think a reasonable person would conclude that untreated explosives waste should not be transported outside of the facility due to potential loss of life and property.

I am not an attorney, but I'm sure that as an attorney, you know there may be certain nuisance rights you may have. If you have a claim that can be supported by law, I'm sure you would know how to pursue it.

Judge Toohey, I am sincere in saying that I regret this is happening to you and your family. I am also sincere when I say we have handled this properly thus far and that we will continue to handle it properly in the future. Weighing the community good, we will do what science tells us to do within the limits of what the law allows.

With respect,

Quincy N. Styke III
Deputy Director for Central Office Operations
Tennessee Department of Environment and Conservation
Division of Air Pollution Control

From: Mark Toohey [Personal Email / Ex. 6
Sent: Wednesday, April 15, 2015 6:26 PM
To: Quincy Styke
Subject: BAE